



Thesis for M. D.

by Eric Sinclair

M.B. Univ. Glas.

Subject:

Records of a Series
of Post Mortem Examinations in
a Hospital for the Insane.

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Sex	Age	Sura mater	Pia mater	Decortical:	Vessels	Consistence	Serum arach:	Ventr:	Cavities:
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General Paralysis

m	29	thick	thick-opaque	right large left slight		very soft	large	large	
m	51	thick	thick-opag.	marked	ext: atheroma	very soft	some	some	
F	32	thick	thick-opag.	marked			consid:	consid:	
m	43		thick	marked			consid:	large	
m	56	membrane und- on both sides	thick				large	consid:	thick
m	54	thick		very great		firm	consid:	extreme	v. thick
m	55	thick	thick-opag.	marked		very soft	extreme	extreme	thin
m	31		thick-opag.	right large left - none			consid:	consid:	thick
m	39	thick - {adhes: to calv.	thick	marked			some	some	thick + dense
m	57		thick-opag.		congested	firm	some	some	thick + dense
m	36	extremely thick strand		very slight		very soft	some	great	
m	35	thick	thick-opag.		congested slight atheroma	very firm			
m	52		thick-opag.	very slight	congested	rubby	consid:	consid:	
m	34	thick	thick-opag.	slight		very soft	large	large	thick
m	40		thick-opag.	very great			consid:	some	
m	47	thick	thick-opag.	slight		soft	slight	slight	
m	38		thick-opag.		slight atheroma	firm	some	some	
m	49	thick		right - v. great left - none	very atheromat.	very soft	slight		
m	47		thick-opag.	slight		soft	some	consid:	
m	60	thick	thick-opag.	some	marked atheroma	very soft	consid:	large	
m	33	thick - on folds in line of vessels				very soft	great	consid	

Chronic Delusional Insanity

m	38				congested	soft	very dry		
F	41								
F	52						consid		thin
F	48				very anaemic	firm	great	some	
m	40				congested				
m	55	thick - {new bone in fold.			atheroma	firm	slight		
m	57	thick	thick			edema firm	consid:	consid	thin
F	46		thick-opag.			soft.	consid:		
m	67	thick - {adherent to calv.	thick		ext. atheroma		slight		
m	44				congested	firm			
m	57				congested	firm			thick
m	22					firm			
F	70		thick - minute haemom.		very atheromat	soft	consid:	consid:	
F	45				very atheromat				
F	54				very atheromat	very firm	consid:	slight	thick
m	69	thick - {adherent to calv.	thick	slight	cong: atheroma	firm	great	great	
F	50	thick	thick-opag.		slight atheroma		slight		
F	65	thick - {adherent to calv.	thick-opag.		ext: atheroma	soft			thin
m	47		thick-opag.		congested	firm			
m	50	thick - {lymph fluids				edema soft	large	large	thick
F	47								
m	25				congested		consid:	slight	

Other changes in Brain

Bodily Diseases

Fatty heart.

atheroma of aorta

Softening of whole right hemisphere

Hydatid cyst in frontal lobe

Extreme anaemia of brain

apoplexy

{ Haemorrhage into Pons -
Softening of third right frontal convol.

{ Occlusion of basilar artery +
Softening of Pons

Hydatid disease of lung, liver, spleen, etc.
Gangrene of lung
Phthisis Pulmonalis - Atheroma of Aorta

Aneurysm of Aorta
old Pleurisy - hypertrophy of left ventricle ^{of heart}
Gangrene of lung.
Pericarditis - collapse of left lung - caseous ^{right lung}
Fatty heart.
Fibroid Pneumonia
Pleurisy.

Pneumonia chronic.

Pneumonia
Intestinal obstruction
ulceration of large intestine

Sex	Age	Iowa Mater	Pia Mater	Decorticated	Vessels	consist	Serum		Calv.	
							Arach.	Ventr.		
Dementia										
m	32	thick	thick			very firm	consid.			
m	80				extr. atheroma		some	some		
m	50		thick-opaq.			very soft	consid.	some	dense	
m	25		thick-opaq.		congested				dense	
m	61	Lymph under				firm	large	large		
m	40	thick			congested		consid.	consid.	thin	
m	48	thick - {bone in fold	thick		atheroma	firm	some	large	thick	
m	68	adherent to calvarium			extr. atheroma		some		thin	
m	52					firm	some	some		
m	37	thick,	thick			extr. soft				
F	46		opaque			soft	slight	slight		
m	65	adherent to calvarium			congested atheroma		some	consid		
m	48		opaque		congested		very dry		dense	
m	71		thick-opaque				consid.	consid		
m	40	thick			congested					
m	53		thick-opaque		extr. atheroma	firm	some	consid		
m	56		thick-opaque	slight all over.	congested	firm	consid	consid		
m	54	thick	thick		slight atheroma	firm	slight	large	thick	
m	32	thick			very atheromat		consid	consid		
m	72	adherent to calvarium	thick		very atherom:		large	extreme		
m	78				atheroma	soft	large	large		
F	62						some			
m	50		thick		very atherom:		consid	some		
F	54	thick in patches			atheroma	soft	large	some		
F	53		opaque	consider		soft	great	large	thin	
F	60				atheroma		consid			

Acute Insanity										
m	50					congested				thin
F	23						soft			hard
m	51					congested				thin
m	50					congested				
F	30					congested				dense
F	43	clot under				atheroma		some	some	
F	23					congested				very thick

Epilepsy										
m	38		thick-opaque	extreme all over		syphilitic disease	very soft	some	consid	dense
m	26					congested				
m	26	Bone in fold				congested	firm	some		
F	32					congested	firm	slight		
m	24					congested	firm		consid	thin
m	27		opaque			congested	firm	consid	consid	dense
m	56					congested		some		

Congenital Mental Deficiency										
F	17							some		
F	30						firm			thick

Softening in both optic thalami

apoplexy

Haemorrhage at base of brain
Softening in left corpus striatum
apoplexy
cyst in left optic thalamus

Basilar dilated and atheromatous

Softening in frontal lobe + left optic thalamus

Softening right optic thalamus
Softening in left optic thalamus in occipital lobe

Numerous haemorrhages in cortex

Pneumonia

Heart very small

Phthisis Pulmonalis

Disease of heart, liver, kidneys, lungs

old Pleurisy
fatty heart.

Heart large - 16 oz.

Phthisis Pulmonalis

ulceration of large intestine
fatty heart

clot in left ventricle of heart breaking down in centre

Phthisis Pulmonalis.

← Typhoid fever lesions in intestine
ulceration of large intestine

fatty heart.

Tumour of Brain

Phthisis Pulmonalis

left hemisphere large

In the following paper it is proposed to give in a tabulated form the results of the post mortem examinations made in the Hospital for the Insane at Gladesville during the past three years. The cases are virtually unselected and consecutive only those being omitted in which the brain was not examined. The series comprises a total of 85 cases.

✓ No attempt will be made to draw conclusions as to the causal relations of the appearances found to the form of mental disease present during life; the paper is intended to be a record only of personal observations of the coarse pathology of the brain in the Insane. ✓ It is not intended either to describe the microscopic changes caused by Insanity.

In most treatises on the Pathological Anatomy of Insanity little distinction is made between the different forms of mental disease, acute and chronic cases of ordinary insanity being mingled with other varieties. It is more instructive, however, to put these different forms under separate headings and to find if possible features peculiar to each. This has been insisted on by Sankey† in his book + lectures on mental disease.

on Insanity, and in it he gives elaborate tables drawing comparisons between General Paralysis and various forms of ordinary Insanity.

In the tables accompanying this paper the following arrangement has been used; - General Paralytics are taken first. Then all forms of chronic delusional insanity, mania and melancholia being combined. In the chronic forms of these diseases the changes in the brain are found to be practically the same, and indeed there seems to be good reason for associating the next division - dementia with them for pathological purposes. Whatever the cause of the mental symptoms in delusional Insanity and dementia may be and wherever situated in the nervous system, it is certainly the case that it produces very similar effects, and that after death the diseases can hardly be distinguished. After dementia are taken the deaths during the acute stages; then epileptics and lastly two cases of congenital mental deficiency.

It will be seen that between the various classes there are certain distinctions which are prominent and obvious, especially between the General Paralytics and all the other classes, but it is also the case ^{that} the changes found are more or less common to them all.

and it is only by the combination or accumulation of particular conditions in any one case that a diagnostic value is obtained.

The morbid changes besides being common to the various diseases are generally similar in character in each, the dura mater, pia mater and arachnoid are increased in thickness, toughened and often opaque, the brain is either softened or unnaturally firm and the serum surrounding the brain and in its cavities is increased in quantity. These conditions pointing to brain wasting would naturally be looked for in the greater number of the cases, chronic forms predominating.

There are however other changes found which are confined to the different forms of disease, so as to approach in nature distinctive symptoms. The most noticeable of these is the almost constant occurrence in General Paralysis of what has been termed 'decoration' that is the adhesion of the pia mater to the cortex so that when removing the membrane pieces of the grey matter are necessarily stripped off with it.

In Acute Insanity the absence of any marked coarse pathological change at once attracts attention; congestion of the brain is present in the most recent cases but beyond this no morbid appearance is noted.

Again it will be noticed that atheroma

of the cerebral vessels is very common in the chronic Insane but is rare in General Paralytics, in Acute Maniacs and in Epileptics. That it should not be found in Epileptics and acute maniacs is not surprising as these patients are usually young; but the average age of General Paralytics nearly approaches that of the chronic Insane and thus its rarity in General Paralysis becomes a distinctive feature of that disease.

The distinctive features of the various mental affections will be seen more easily by putting them in the form of a short table. This can only give a very general view of the appearances found and must not be taken as a complete record of them.

	General Paralysis	Dementia	Chronic Delusional Insane	Acute Insanity	Epilepsy
Dura mater	thickened	thickened	thickened	natural	natural
Pia mater	thick, opaque	thick, opaque	thick, opaque	natural	natural
" adhesions to cortex	adherent.	rarely adh.	rarely adh.	not adh.	rarely adh.
Vessels - Arteries	rare	very common	very common	rare	rare
" Congest.	rare	sometimes	sometimes	common	common
Consistence	soft	firm or soft	firm or soft	natural	firm
Pericran.	large	large	considerable	none	consid.
Bodily tissue	not common	very common	common	not common	not common

Though this table gives a very incomplete idea of the changes still it brings out the points in which the mental diseases differ from one another.

It will be instructive to describe in detail the morbid conditions present in the various mental diseases taking them in the order used in the tables.

General Paralysis. The dura mater was thickened and tough and sometimes firmly adherent to the skull. The other morbid conditions of the dura found in the present series were :- in one case, a tough and thick lymphatic exudation underneath the membrane probably the result of past meningitis ; in another patches of extreme thickening in the line of the vessels. The arachnoid was also increased in thickness and had numerous milky opacities ; these opacities were commonly found on the convexity of the brain over the parietal ~~and~~ frontal lobes and usually in the line of the vessels and over the sulci. In some cases they were very extensive and general, in others of slight extent, and, rarely, none at all were seen. The pia mater too was thickened and tough and resistant. In the great majority of cases it was adherent to the cortex beneath so firmly as to remove pieces of the grey substance with it when it was stripped off. This was generally confined to the frontal and parietal lobes and was never found on the occipital lobes. The adhesion was usually found on the summits of the convolutions. It was almost

always bilateral and in nearly equal amount on each side and varied from one or two points to a state in which the membrane was adherent to every convolution on the frontal and parietal lobes. In three cases it was not equally distributed on both sides; in each there was very extensive adhesion over the right side, the left having none at all in two and very few in the third.

The brain substance was usually soft, sometimes it was unnaturally firm, and in a few cases unaltered in consistence.

The serum in the ventricles, in the subdural space and in the meshes of the arachnoid and pia mater was much increased in quantity; generally it filled the spaces left by the widely separated and atrophied convolutions.

Atheromatous disease of the cerebral vessels was rare and congestion of any part of the brain unusual unless the patient died in a "fit". It is very noticeable too that few bodily affections or complications were found in this disease. General Paralysis almost invariably die from the brain disease itself and not as in other cases from some intercurrent bodily ailment.

In the generality of cases most of these conditions were found the whole forming a picture which would enable one to say with considerable accuracy that General Paralysis was the cause of death. When to these naked eye

changes is added the microscopical examination little doubt should remain as to the mental disease present in life.

In Dementia there was also found thickening, brightness and opacity of the membranes, their appearance resembling very much that found in General Paralysis. In only one case was there lymph under the dura mater - in loose flakes; in another a small new development of bone was found in the falx cerebri; in a third the dura was thickened in patches. The opacities in the arachnoid were not so extensive or so common as in General Paralysis and only in a very occasional case was any adhesion of the pia mater to the cortex found - (only twice in 26 cases). The consistence of the brain varied considerably it was generally softened but was often unnaturally firm. The effusion of serum was usually large in quantity, sometimes it was in very great excess and very rarely it was only slightly increased. Atheroma of the vessels was very common (half the number presenting it) and it was sometimes very extreme extending into arteries of microscopic size and making them into rigid tubes of small calibre. The vessels were sometimes congested, this depending on the immediate cause of death. Marked signs of degeneration of the brain tissue and of old disease in that organ, patches of old and recent softening in the

central ganglia or in the cortex, haemorrhages of various kinds &c are extremely common, more common than in other forms of mental disease. This is probably due to the fact that these patients are among the oldest residents in the Hospital and are the oldest at death as well as that they generally die from some result of the brain lesion. In some cases it is not unlikely that the coarse brain lesion was the original cause of the dementia, but in many others it doubtless occurred as an incident of the mental illness. In a large number of the cases there was some serious bodily disease, this being often the cause of the fatal issue.

The condition of the central nervous system in the chronic delusional insane resembles closely that just described. The membranes presented the same appearances and were found diseased in about the same number of cases, adhesion of the pia mater to the cortex was as infrequent, the brain substance was softened or hardened in a like proportion, there was generally large effusion of serum, and atheroma of the arteries was also very common and sometimes very extensive. The average age of these patients was 50 years and many of these too were old inhabitants of the Institution. There was here too found - but much less

often - coarse brain lesion, other than that just described; apoplexy, softening &c.

In this class serious and fatal bodily disease was very commonly found; half the cases died from these affections quite apart from the brain lesion. In this direction as strong contrast is presented between Dementia and the Chronic Delusional Insane. In Dementia coarse brain lesions are very common and are in a large number of cases the cause of death. In chronic delusional insanity coarse brain lesion is not frequent but bodily diseases are and they are very commonly the cause of death. This is almost the only well-marked difference between the two classes.

Of the bodily diseases lung affections were by far the most common and among these pneumonia and phthisis were most frequent.

In Acute Insanity the condition of the brain was very different from each of the previous classes. It is here ~~that~~ more especially, that often no change can be detected, the brain appearing natural to the naked eye and even to subsequent careful microscopic examination. The only coarse changes found have been congestion of the brain of an acute character and rarely some slight increase of serum. In one case atheroma of the arteries was present and in the same case

there was haemorrhage under the dura mater. Intercurrent bodily disease was not common the patient in most instances dying from the brain lesion. One of the cases here given was one of typhoid fever, the acute mania being obviously due to the fever. In another dysentery and in a third phthisis pulmonalis were the cause of death but were not in any way connected with the mental lesion.

In Epilepsy the membranes were as a rule normal, no thickening or adhesion to the cortex being present; the brain was firm in consistence; there was slight increase in serum and always considerable venous congestion. In each instance death was due to the epilepsy no bodily disease being present or contributing. In one case there was a brain tumour which may have been and probably was the cause of the 'fits' and in another there was probably syphilitic disease of the vessels. This last case has not been included in the above description though it remains in the class in the table. It will be more fully described later.

The cases of congenital mental deficiency are two in number and are therefore too few to be worth describing.

The foregoing descriptions are taken entirely from the series of Post Mortem Examinations upon which this paper is based, but in their

essential details they correspond with the descriptions given by writers on this subject. No microscopical examinations are detailed nor is any attempt made to theorise as to the symptoms these changes may have produced during life or as to the physical causation of Insanity in its various forms. This would extend the paper beyond the prescribed limits and alter its character from a mere record of pathological investigations to a treatise on the same subject.

To give a more accurate idea of the pathological changes found in the insane brain as illustrated by the present series of Post mortems it will be necessary to describe the morbid appearances in greater detail. This will best be done by taking the various tissues in order, and describing the changes found in each.

Dura Mater. In 32 cases it was found to be thickened and in most of these it was also ^{more} opaque than usual. In 2 the thickening was localised in patches, chiefly over the parietal lobes. Both cases were advanced Dementes, one a General Paralytic. In 3 cases lymph was found between the dura mater and the arachnoid; in one, an aged Dement, the lymphic matter was in large loose flakes only on the right

side and there was no acute inflammatory condition of any part of the brain; in the second there was a tough membranous structure partly adherent to the dura mater on both sides; this patient was a General Paralytic; the third case closely resembled the first, but occurred in a Chronic Maniac and the effused matter was semi-purulent.

In 7 cases the membrane was very adherent to the calvarium, several times it was impossible to strip it and it had to be cut away and removed with the bone.

Twice small pieces of bone were found in the substance of the membrane in the falx cerebri where they must have been developed abnormally. These were small and caused no symptoms during life. In one case haemorrhage under the dura mater was found. This was in a patient who died early in an attack of Acute Insanity with typhoid symptoms. On the right side there was a clot of considerable thickness covering the whole convexity and firmly adherent to the membrane and on the left there were numerous small spots of haemorrhage. The arteries were atheromatous.

Pia Mater and Arachnoid.
These membranes lying together

usually undergo similar changes so that it has not been thought necessary to treat them separately.

They were found to be thickened in 41 or $5/8$ of the total cases and in most of these there were opacities of greater or less extent. These opacities were usually most frequent over the convexity of the parietal and frontal lobes. They were rare on the under surface of the brain and on the occipital lobe. Their usual site was over the sulci, but sometimes the various patches combined to form one large opacity. In nearly every case of long standing these membranes were tough and thick along the median fissure and were there more or less adherent to the dura mater.

In one instance there were numerous minute haemorrhages in the pia mater, not extending to the cortex. The patient was a woman of 70 years of age with markedly atheromatous vessels.

Adhesion of the pia mater to the cortex was found in 20 cases. Of these 16 occurred in General Paralytics, 1 in chronic delusional Insanity, 2 in Dementia, and 1 in Epilepsy. In other words it occurred in 74% of the General Paralytics and in only

4.6 % of other forms of insanity. The difference in the frequency of occurrence is so great as to make it almost characteristic of General Paralysis. Dr. Sankey† in a series of 15 cases of General Paralysis found this adhesion in 8 only, and therefore he says "it must not be supposed that this condition is universally found or that it is peculiar to the disease". He found in only one of 15 cases of Ordinary Insanity so that even his figures assist to uphold the doctrine of this condition being peculiar to General Paralysis. Dr. Grichton-Browne states‡ that it was present in 80 % of his cases and he believes that it is the most constant and most diagnostic change in General Paralysis. In the cases of General Paralysis here reported it was generally found in the frontal and parietal lobes, more rarely on the under surface of the brain and never on the occipital and but rarely on the temporo-occipital lobes. There was however one exception to this distribution and in this case - an undoubted General Paralytic - the membrane was completely adherent over every part of the right hemisphere, but not at all on the left side; the right hemisphere was at the same time softened, the vessels were atheromatous but were

† Lectures on Mental Diseases - page 296
‡ West Riding Reports - Vol VI - page 170 et seq.

normal in distribution and none were blocked. It is probable that in this case there had been some local inflammation apart from the mental disease. A similar case in an epileptic has already been referred to and will be described later more fully. In two other cases the distribution was not equal on both sides and in these also the right side was that on which the adhesion was great the left being either quite or nearly free from it. These cases presented no other unusual features, nor were their symptoms during life abnormal. As a rule the 'decortication' was confined to the summits of the convolutions and only in the cases of unusual distribution just referred to was it found in the sulci.

Serum. an increase in the amount of serum was found in 57 cases or 64%. The fluid was found in the subdural space, in the meshes of the arachnoid and pia mater, and less frequently in the ventricles though still in a large proportion (54%). The quantity of serum was always greatest in the cases of chronic insanity or of General Paralysis; it was only once found in an acute case and then in moderate amount. Observation showed that serum effusion was greatest in quantity in

those patients whose mental powers failed greatly, and who before death remained for some time in a state almost of Dementia, often bedridden, and who died usually from the brain lesion and not from an intercurrent local affection. In fact it is hardly too much to say that large serous effusion is a sign of chronic Brain disease and more especially of loss of mental power, whether the Dementia be the primary form or only secondary to Delusional Insanity or other mental or Brain disease.

In some instances the serum was present in local bullae between the convolutions filling a space left by atrophy of the brain substance. It was in all cases clear and transparent without admixture of pus or blood.

Bloodvessels. The form of disease most commonly found is, as would be expected, atheroma. This affection was found in 26 cases and was distributed among the various diseases as follows;— in 12 or nearly half the cases of Dementia, in 8 nearly one third of the Delusional Insane, in only 5 = $\frac{1}{7}$ of the General Paralytics, once in a case of Acute Insanity and not at all in Epileptics. As compared with published statistics this proportion is undoubtedly large. Genty found it

in 60 out of 550 autopsies of the Insane
Balfour† in 108 out of 700 cases. Shown
as percentages these figures are as follows; -
cases in this paper 29% - Balfour 15.4% -
Guntz 10.9%. That atheroma
should be often found in the cerebral
vessels of insane people is not to
be wondered at since few of the
insane die at an early age.
For says H" it must be remembered
that many of the autopsies in Asylums
are held on aged persons in whom
this kind of degeneration is common
and that this condition has more
to do with age than with insanity.
The average age of the cases in which
atheroma was here found is 55.9 years.
Guntz in the paper already quoted
says that 20% were upwards of 50 years
of age. The advanced age of the
patients explains to a great extent
its comparatively greater frequency
in some mental diseases than in
others. It was most common in
Dementia nearly half the cases
presenting it - the average age of this
class was 52 years; next most frequent
in chronic Delusional Insane - average
age 50 years; then General Paralytic
average age 49; then Acute Insanity
average 38.5, Epilepsy - 32.7 years. It
was thus frequent in this Hospital

+ Journal of Mental Science Vol 81 page 588
H Pathological Anatomy of Nervous Centres page 180
† Journal of Mental Science Vol 78 pages 50 & seq.

in proportion to the age of the classes examined.

The freedom of General Paralysis from this form of disease is however greater than would be expected as the average age at death was only slightly below that of the chronic insane. "According to Rokitanusky atheroma is commonest between the ages of 40 and 50" General Paralysis is recognised as a disease of the prime of life and is understood to select as its victims men in robust health. But as the age at which it occurs borders on that at which atheroma is common, and as it causes such a complete alteration in the tissues making them liable to degenerations, the cause of the infrequency of the atheroma must be sought in the good bodily health rather than in the youth of the patients. It is true that the usual average age at death is lower than that here given as shown by Mr Clapham† in an analysis of 243 cases of which the average age was 41.6, but though at that age atheroma might be uncommon, it does not help to explain its infrequency in the present series where the average age is 47 years.

D. Crichton-Browne[‡]

† Cook - Manual of Pathology page 358

‡ West Riding Reports Vol VI page 21

‡ do do do Vol VI page 176

in the before quoted paper in the West Riding Reports states that he was "struck by the freedom from atheromatous deposit and calcareous degeneration of the great arteries of the brain" in General Paralysis, but few if any other writers have recorded their experience in this direction. Great attention has been paid to the condition of the minute arteries and many and valuable papers have been written as to the changes found in them. The fact that so many observers have detected disease in the small branches makes the infrequency of this degeneration in the larger vessels more conspicuous and striking.

In two cases small cysts were found in the choroid plexuses.

In one there was a small aneurism, unruptured, at the division of the left middle cerebral artery; in this case the arteries were atheromatous and there was haemorrhage into the Tons Varolii.

In one case the basilar artery was closed by a thrombus causing softening of the Tons Varolii.

In another patient the right vertebral was almost closed by what was probably syphilitic disease. This case will be more fully described later.

The basilar artery in another patient

the basilar artery was of twice its natural size -

after describing the diseases of the vascular system it seems right to turn to haemorrhages of various kinds. Three instances of apoplexy occurred. By this is meant the effusion of a large quantity of blood into the substance of the cerebral hemispheres occurring rapidly and causing death. In each of these cases the arteries were very atheromatous.

In another patient the haemorrhage occurred at the base of the brain and did not penetrate its substance.

In the case of a man aged 69 the tons vasculi was filled with minute haemorrhages so close together as to be almost continuous.

In another case there were numerous small haemorrhages into the grey matter distributed in an irregular manner over its surface. This patient was 60 years of age, and suffered from atheroma of the arteries; in the left ventricle of the heart there was a large adherent clot of some age breaking down in its centre, and it is not improbable that minute emboli were detached from this and were the causes of the haemorrhagic spots in the cortex.

all these haemorrhages occurred among the Demented and the Chronic Insane.

In the General Paralytics and Epileptics none were found. In one of the acutely insane however there was a large firm clot underneath the dura mater, the appearances resembling in many ways those seen in pachymeningitis haemorrhagica.

Softening of various parts of the brain were found occasionally. As in the case of the haemorrhages these almost invariably occurred among the chronic insane - demented and occasionally insane - and in most instances in cases where there was arterial disease. The most extensive softening found was in a General Paralytic in the whole right hemisphere was affected there was no occlusion of vessels and the origin of the condition was not discovered.

Small pieces of softening, red and yellow, were found in 6 cases, occurring in the central ganglia, corpora striata and optic thalami, and in the convolutions of the frontal and occipital lobes.

In a patient aged 38 years the basilar artery was found to be completely blocked by a thrombus, and this had caused a condition of softening in the Genua basilaria, its centre being semi-defluent.

In 26 cases the whole brain was less firm than natural and in 27 it was increased in firmness.

A tumour of the brain was present in one instance; an epileptic in whom it is probable it was the primary cause of the fits. It was situated in the occipital lobe.

Hydatid disease of the brain was found in one case. The cyst was large enough to contain a small orange and was situated in the frontal lobe. This was the only hydatid cyst in the brain in the patient, but there were hundreds in the lungs, liver, kidneys, and even in the omentum spleen and stomach cysts of some size were present.

The calvarium was increased in thickness, dense and heavy in 20 cases; in 8 it was of abnormal thinness.

No record of brain weights has been included in this report. This subject is one which requires a special investigation to give accurate returns. Unless the greatest care be taken to compare the total weight with the age, height and configuration of the individual and with the capacity of the skull; to compare the different parts of the brain with one another and by careful Specific Gravity observations to detect whether the

altered weight is due to increased or lessened density or simply to atrophy a series of weighings would be of little value.

Bodily diseases.

Pneumonia was found in 3 men. This by no means represents the frequency of its occurrence in the Insane. It more commonly terminates in recovery, especially in the warm climate of New South Wales.

Phthisis Pulmonalis was the cause of death in one man and 5 women. This and other lung affections, though common are not nearly so frequent as in colder climates. Most of the consumptives were young people.

Fatty degeneration of the heart was present in 4 men and one woman. Other cardiac affections were also found.

In one male patient a large aneurism of the aorta ruptured causing sudden death. The aneurism had involved the recurrent laryngeal nerve and by pressure on it had produced loss of voice during life; but the patient added this to his delusion and could not be persuaded that one of the attendants had not stolen his voice and hidden it in a flower bed. The case is a good illustration of the physical causation of delusions.

in some instances.

Gangrene of the lung,
pleurisy, Pericarditis, Intestinal
obstruction, Inflammation & Ulceration
of the large intestine, disease of the
liver, chronic hepatitis were among
the other pathological conditions found.

The case about to be
described has been referred to in
several places in the preceding paper.
It presents many features of interest and
hardly falls naturally into any of the
divisions of mental disease already used.
It has been placed among the Epileptics
however as it most resembled them in
symptoms and as the patient was
considered to be an epileptic during life.

J. M. G. act 37, single, a
boundary-rider, was admitted on 4th July
1884 from Wickham a district 583 miles
from the Hospital. Very little previous
history was obtainable. He was said to
have been weak-minded and to have
suffered from fits for several years.
He himself said that a fall from his
horse was the original cause of the
illness but it is more probable that the
fall occurred during a fit.

On admission he was found to be a quiet man who answered questions readily and fully. He was very depressed in mind, often shed tears without apparent reason and was slightly demented. He had no delusions or hallucinations. His bodily health was good. He had no signs of syphilis and could not tell whether he had had it or not.

During his residence he had numerous 'fits' which in the main resembled epilepsy but differed in one or two points. The attacks caused more prolonged coma and stupidity than is usual and they were followed on several occasions by paralysis of the left arm and leg and by difficulty in speech amounting almost to complete loss of speech. After a year's stay he began to emaciate and lose flesh, to have fits more frequently and at last had twitching of the muscles of the face and body almost continuously. He was for a time able to speak and eat even while the twitching continued but during the last weeks unconsciousness supervened.

He died on 8th December 1885.

Antisyphilitic remedies were given a fair trial during the course of the illness as suspicions were often directed towards syphilis as a probable cause of the symptoms.

A Post-mortem Examination was held 16 hours after death.

The calvarium was dense and thick especially in the frontal region. There was considerable effusion of serum into the arachnoid cavity and underneath that membrane. The pia mater was thickened and was adherent firmly to nearly every convolution on all the lobes. This adhesion was an extreme condition extending even to the bottom of the sulci. The brain was very soft and collapsed when laid on the table. It weighed $42\frac{1}{2}$ oz. There was considerable effusion into both lateral ventricles the lining membrane of which was granular. The grey matter was pale but not diminished in thickness. There was no congestion of any of the vessels and no gummata or other tumours were present. There was a great difference in size between the vertebral arteries. The left was larger in size than normal but the right was not more than a fourth of its normal size and was hardly pervious.

Microscopical examination of the occluded vertebral artery (for such it practically was) showed that the internal coat was the seat of a great increase in thickness, the new formation consisting of epithelial cells. The

Thickening occurred at one side of the vessel, began low down near its entrance into the vertebral canal and attained its maximum half an inch from its junction with the left artery to form the basilar. It presented the features of syphilitic disease of the arteries. No other signs of syphilis were found in the viscera. There is however every probability that the disease, the epilepsy, was originally due to syphilis; and that this also caused the arterial disease and the adhesion of the pia mater to the cortex.
